

Kenmore Residential Heat Pump Seminar

Brought to you by:
Kenmore Climate Action
Committee
Presenter: Neil Bavins



HP Seminar Agenda



Introductions



Audience Poll



Deciding & Planning



Buying & Installation



Operations & Maintenance

Audience Poll

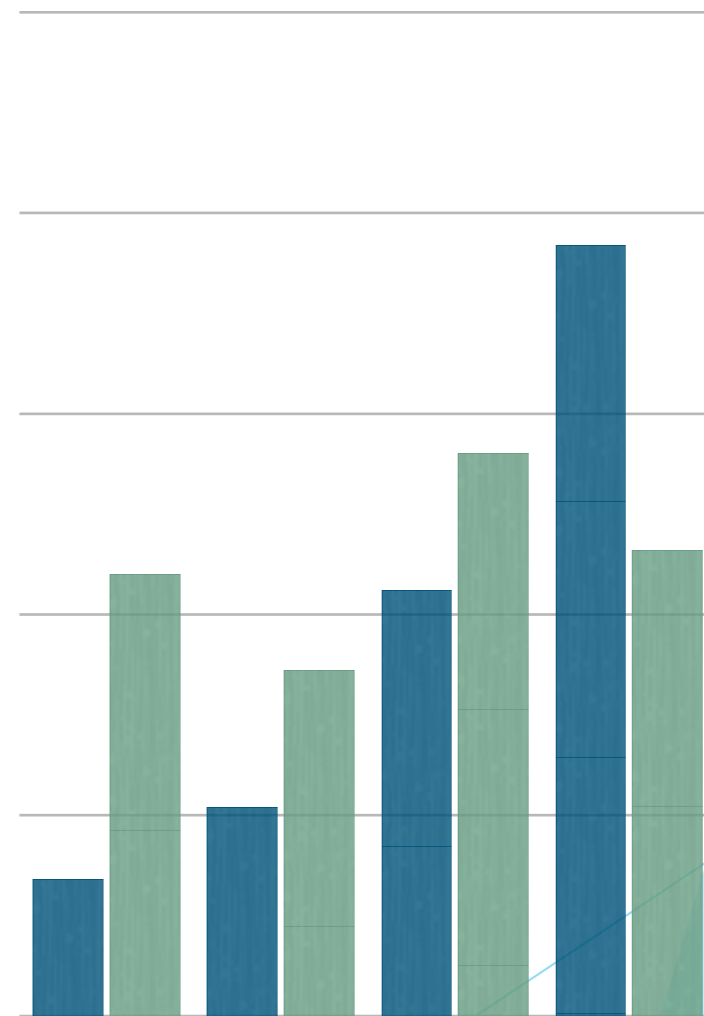
1. Home Type?

- Single Family
- Townhouse or Attached
- Apt. or Condo
- Mobile Home

2. Own vs Rent?

3. Level of Interest?

- Casual
- Interested, not ready to buy
- Install in next 6 months



Why a Heat Pump?

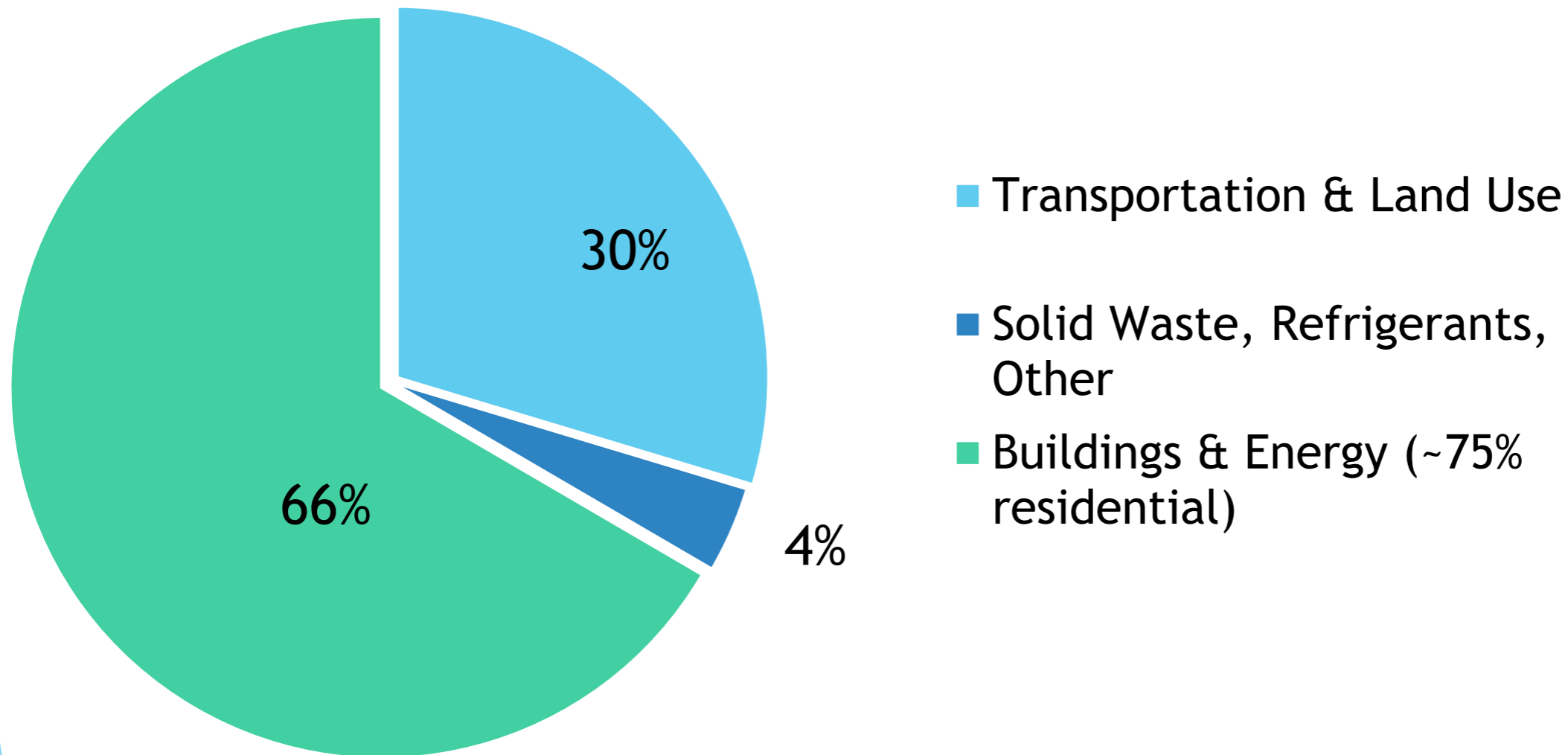
Top 5 Reasons People Chose to Install

- Reduce Greenhouse Gas Emissions
- Ability to Heat and Cool
- Lower Operating Costs
- Recommended by Someone I Trust
- Reduce or Remove Chance of Carbon Monoxide Poisoning

Source: NY State Energy Research and Development Authority-
Cold Climate Heat Pump Owners Study

Why: Greenhouse Gas Reduction

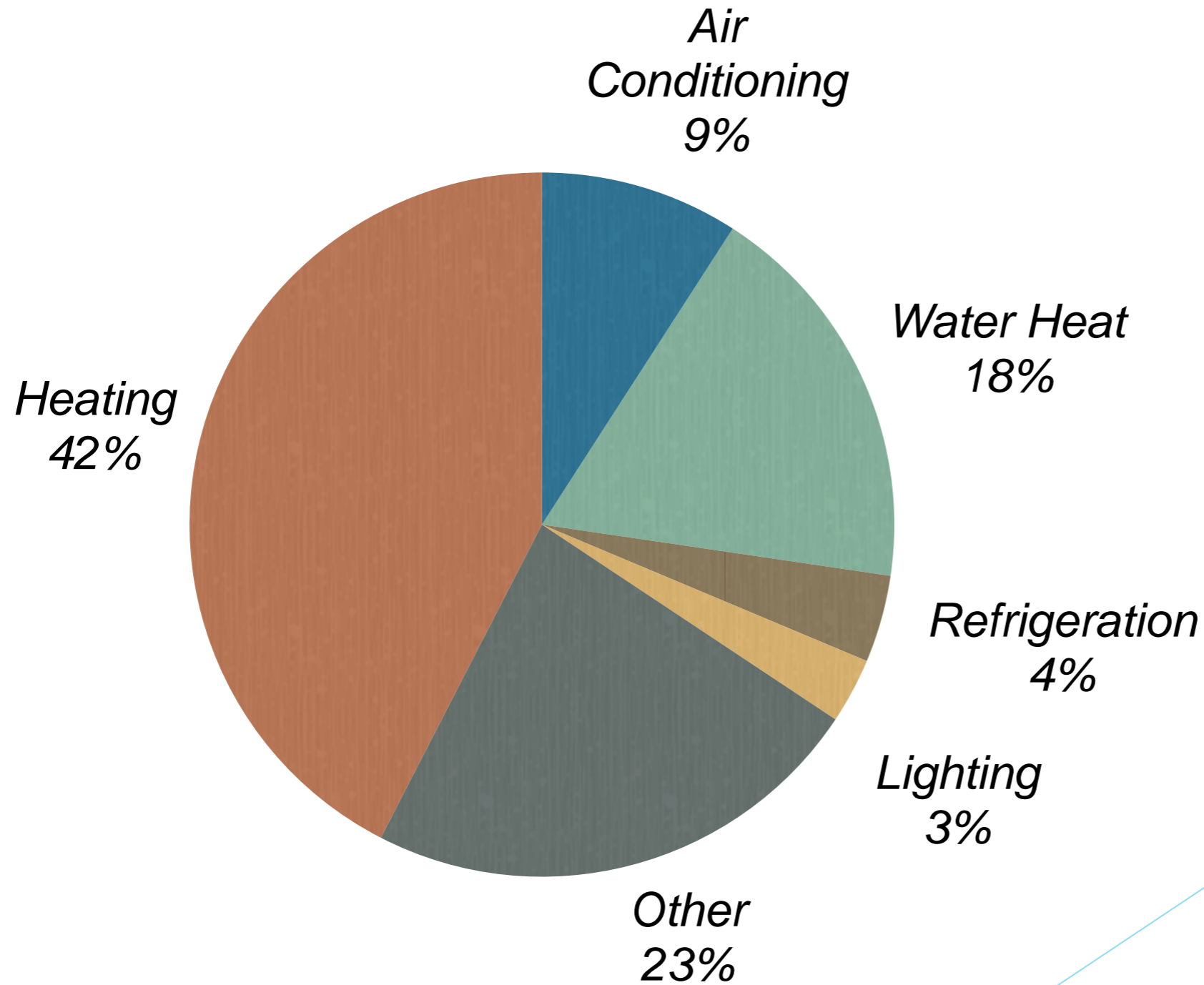
Kenmore GHG Emissions by Sector 2023



Source: City of Kenmore (preliminary data)

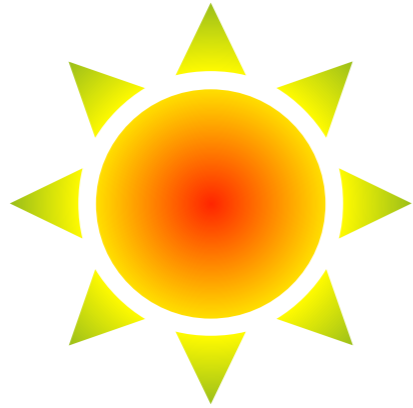
Why: Greenhouse Gas Reduction

US Residential Energy End-Use 2020



Source: US EIA

Why: Ability to Heat & Cool



Why: Lower Operating Costs

Est. Annual Heating Costs for avg. 2,000 sq. ft. Home
in Western WA

Fuel Type	Units	Cost/Yr
Natural Gas	859 Therms	\$1,263
Heating Oil	610 gal	\$2,639
Propane	938 gal	\$3,525
Electric-Baseboard	25,157 kWh	\$2,787
Electric-Heat Pump	10,399 kWh	\$1,152

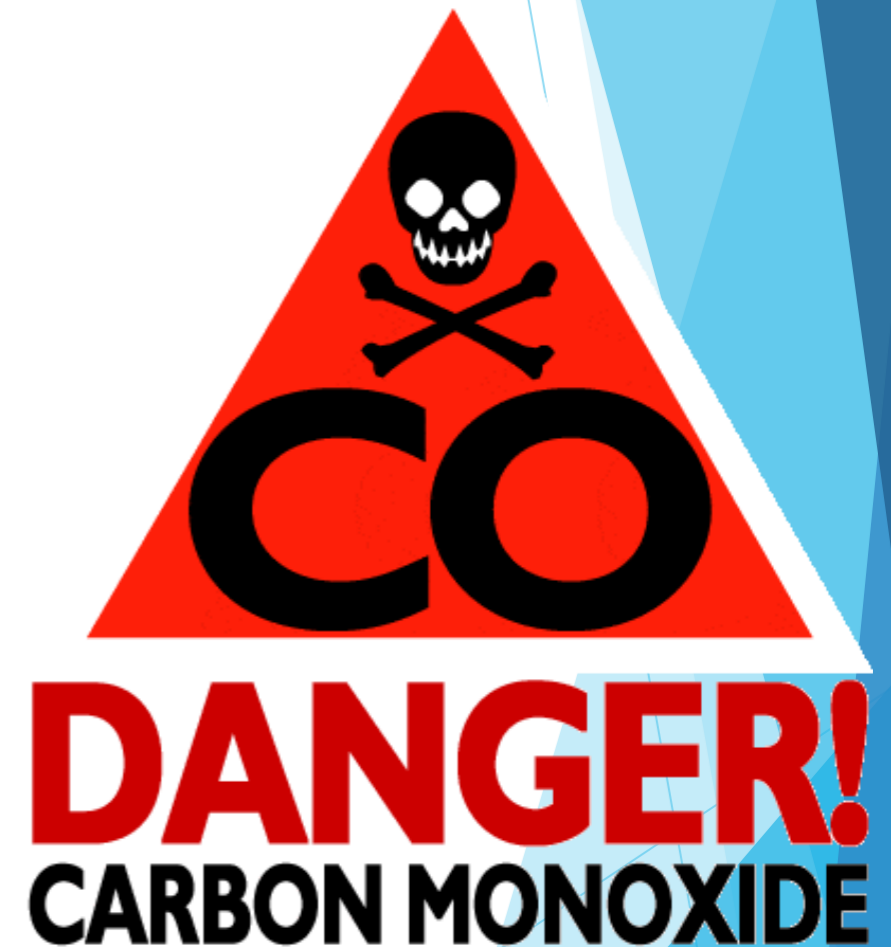
Source: www.remodelingcalculator.org

Why: Recommended by Someone I Trust

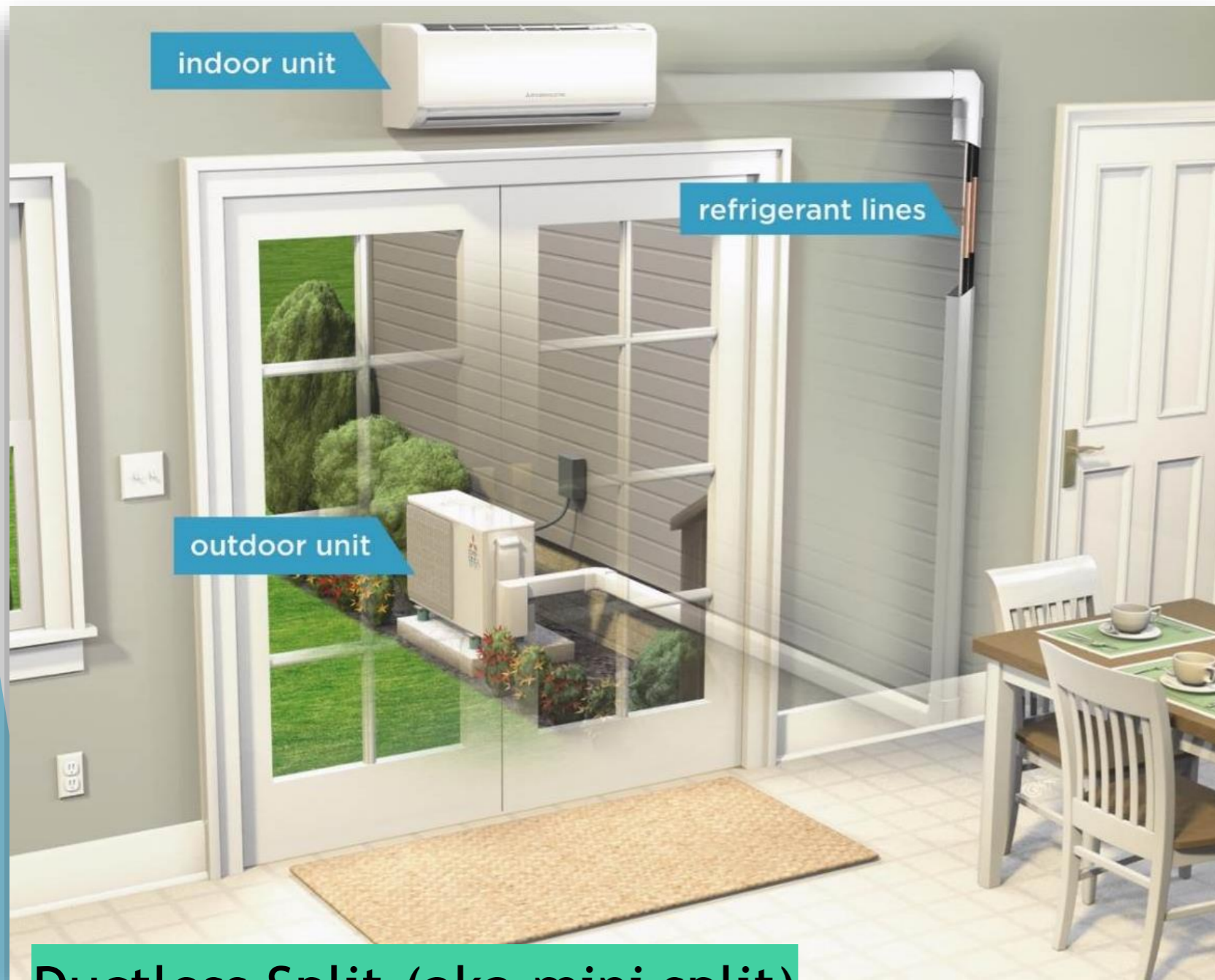


Why: Safer Than Gas & Oil

- Carbon Monoxide Poisoning
- Fire and Explosion
- Nitrogen Dioxide (natural gas) - Asthma



Heat Pump Types



Ductless Split (aka mini split)



Ducted Split



Other Types

HP Types: Ducted

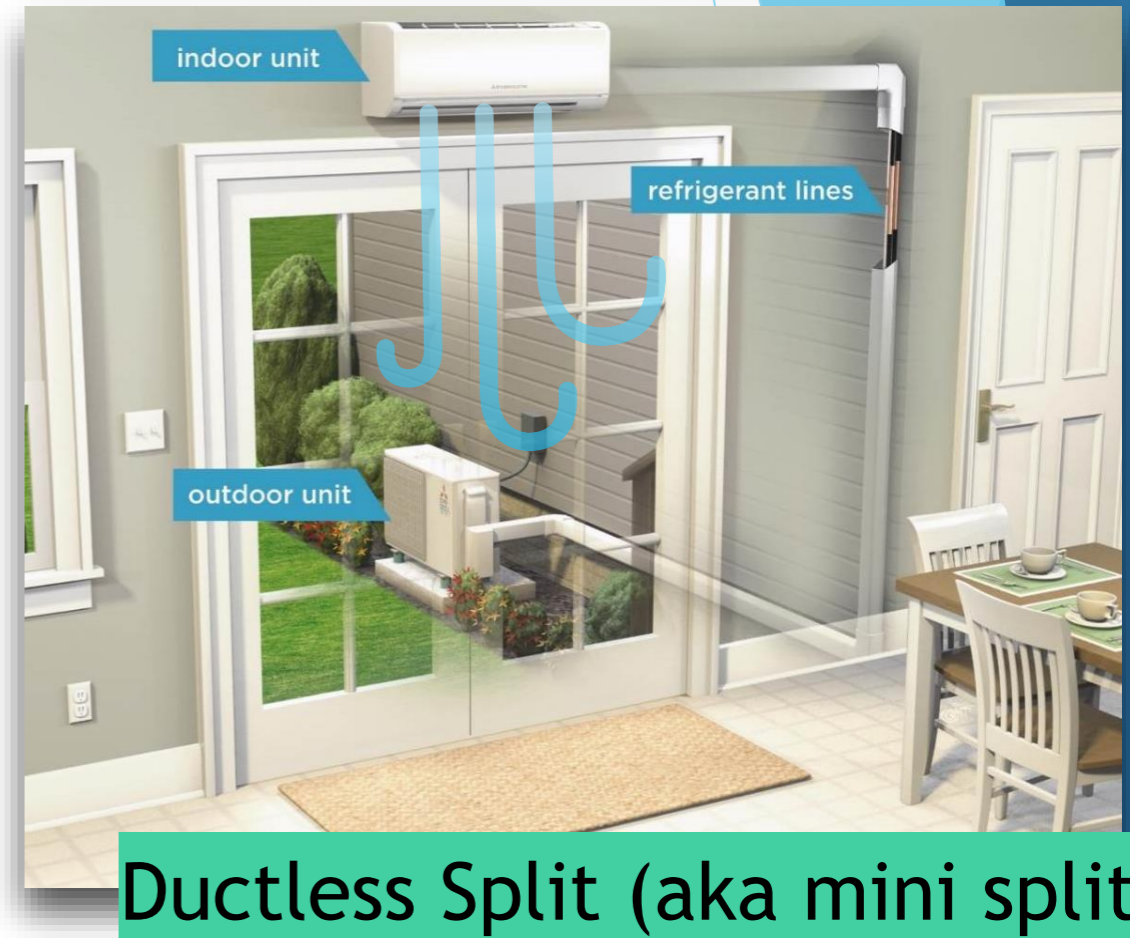
- HP Sizing: Room by Room
- Duct Sizing: Room by Room
- Duct Sealing & Insulation
- Duct Leak Testing (code)
- Defrost Back Up Heat
- Hybrid Systems: HP and Gas Furnace Combined
- Typically have a single thermostat, zoning is available



Ducted Split

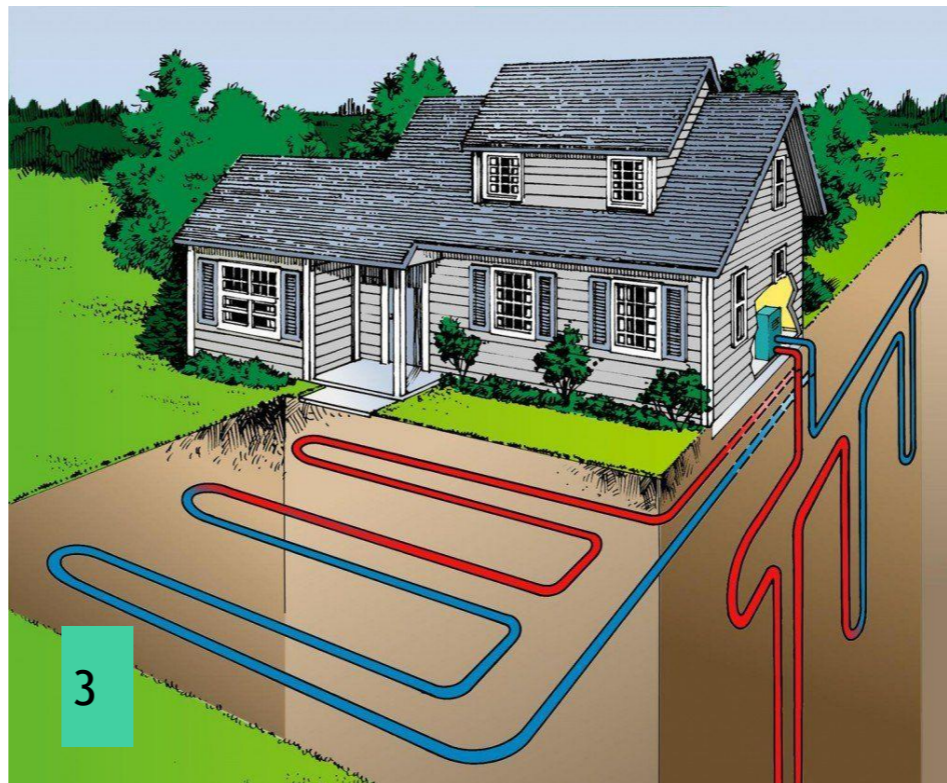
HP Types: Ductless

- HP Sizing: Whole House
- Indoor Units:
 - One or many
 - Locations - Wall, Ceiling, Console, Ducted (small)
 - Mix and match
- Defrost: No Supplemental Heat



HP Types: Other

1. Window Mount
2. Free Standing
3. Ground Source
4. Heat Pump Water Heater
5. Air to Water With Thermal Storage



Home Electrification

Considerations:

- Electrical Service Size
- Tax Credits
- Order of Installation
- Start With Weatherization



Major Electrical Equipment (In Typ. Order of Electrical Load)

1. *Heat Pump*
2. *Car Charger*
3. *Water Heater*
4. *Stove and Oven*
5. *Spa/Sauna*
6. *Dryer*
7. *Refrigerator/Freezer*
8. *Auxiliary Fridge/Freezer*

Solar and Wind

- Probably No Heat Pump Impact
- Probably Doesn't Change Electrical Capacity



Buying: Heat Pump Incentives



- Rebates, Tax Credits (not deductions)
 - Current and Future
 - Federal Tax Credits Over Time
 - Mid stream rebates
-
- ▶ [EnergyStar.gov/rebate-finder](https://www.energystar.gov/rebate-finder)
 - ▶ wa.switchison.org
 - ▶ pse.com/en/rebates/heating

Buying: Contractors Matter More Than Brand



Technician Training and Certification

The Special Skills of Heat Pump Technicians!

N.A.T.E, HVAC (not in WA),
Electrical License

Refrigeration License

Trade School and
Apprenticeships



WA State Labor and Industries (LNI.WA.GOV)

Look Up a Contractor:
Complaints, Safety

“Protect My Home”, “Hire
Smart”, “Common
Contracting Scams”



Reviews and Referrals Matter

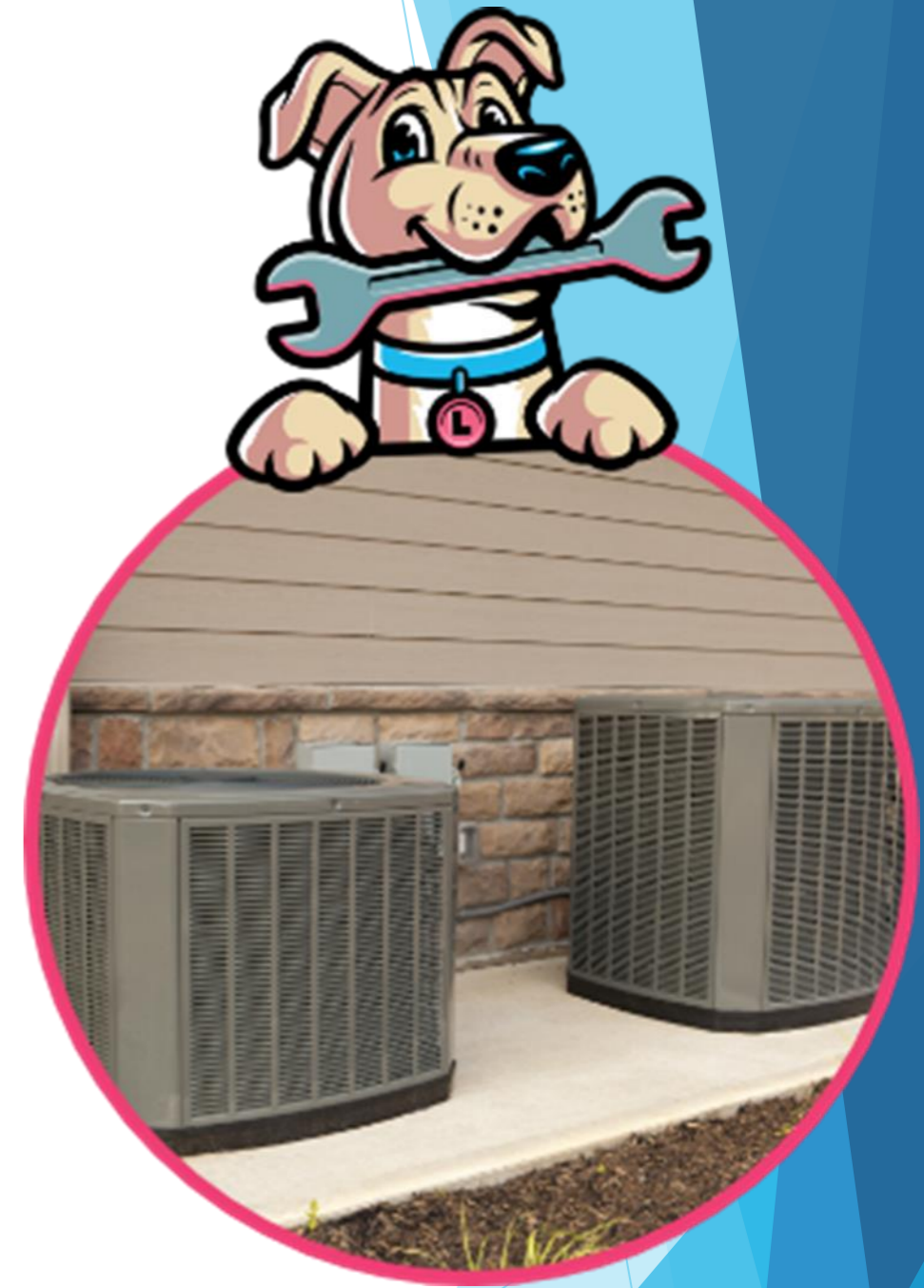


Ask Lots of Questions:
Salespeople, Installers,
Inspectors (use the
checklist!)



Buying: Heat Pump Options

- Efficiency Levels
- Noise (Outdoor Unit)
- Quality Features
- Buy Quality, Not “Builder”
- Don’t Buy Online (Expt. Window & Standalone)
- Not a DIY Project (Expt. Window & Stand Alone)
- Be Wary of Internet Advice



Buying: Environmental Impacts

- GHG Impact of Refrigerants
- Circularity
- Grid Impact



Installation: Important Details

- Indoor Units and Registers: Clear Airflow, Drafts, Defrost Operation
- Outdoor Unit Location: Clear airflow?
- Outdoor Unit Location: NOISE!
- Outdoor Unit: Solid Support/Pad
- Refrigeration Piping
- Condensation Piping



Installation: Important Details

- Electrical Surge Protection
- Refrigeration Piping
 - Pressure Test
 - Evacuation
- Start Up and Testing
- Permits: Mechanical & Electrical
 - Purchasing and Inspection



Operations & Maintenance

Operating considerations:

- Temps
- Night Setback

Owner Maintenance

- Clear, Clean Coils
- Filter Changes

Technician Maintenance

- Annual Inspection
- Test, Clean, Inspect, Tighten

Warranties

- Contractor
- Manufacturer

Reliability & Life Expectancy





Thank you! Questions?

For resources and materials from
this presentation, visit
kenmorewa.gov/CAP